



A Prevention Guide to Promote Your Personal Health and Safety



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES



## A Prevention Guide to Promote Your Personal Health and Safety

Centers for Disease Control and Prevention (CDC)  
U.S. Department of Health and Human Services (DHHS)  
Public Health Service  
1996

Contents	
<p><b><u>Introduction</u></b></p> <p><b><u>Plan Ahead</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Prepare Your Home for Winter</a></li> <li>• <a href="#">Winter Survival Kit For Your Home</a></li> <li>• <a href="#">Prepare Your Car for Winter</a></li> <li>• <a href="#">Winter Survival Kit for Your Car</a></li> </ul> <p><b><u>Indoor Safety</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Heat Your Home Safely</a></li> <li>• <a href="#">Light and Cook Safely</a></li> <li>• <a href="#">Conserve Heat</a></li> <li>• <a href="#">Monitor Temperature</a></li> <li>• <a href="#">Keep a Water Supply</a></li> <li>• <a href="#">Eat and Drink Wisely</a></li> </ul>	<p><b><u>Outdoor Safety</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Dress Warmly and Stay Dry</a></li> <li>• <a href="#">Avoid Exertion</a></li> <li>• <a href="#">Understand Wind Chill</a></li> <li>• <a href="#">Avoid Ice</a></li> <li>• <a href="#">Be Safe During Recreation</a></li> <li>• <a href="#">Be Cautious About Travel</a></li> <li>• <a href="#">What to Do if You Get Stranded</a></li> </ul> <p><b><u>Cold-Weather Health Conditions</u></b></p> <ul style="list-style-type: none"> <li>• <a href="#">Hypothermia</a></li> <li>• <a href="#">Frostbite</a></li> </ul> <p><b><u>One more cool tip...</u></b></p>

## Introduction

When winter temperatures drop significantly below normal, staying warm and safe can become a challenge. Extremely cold temperatures often accompany a winter storm, so you may have to cope with power failures and icy roads. Although staying indoors as much as possible can help reduce the risk of car crashes and falls on the ice, you may also face indoor hazards. Many homes will be too cold -- either due to a power failure

or because the heating system isn't adequate for the weather. When people must use space heaters and fireplaces to stay warm, the risk of household fires increases, as well as the risk of carbon monoxide poisoning.

Exposure to cold temperatures, whether indoors or outside, can cause other serious or life-threatening health problems. Infants and the elderly are particularly at risk, but anyone can be affected. To keep yourself and your family safe, you should know how to prevent cold-related health problems and what to do if a cold-weather health emergency arises.

The emergency procedures outlined in this pamphlet are not a substitute for training in first aid. However, these procedures will help you know when to seek medical care and what to do until help becomes available.

---

## Plan Ahead

Prepare for extremely cold weather every winter -- it's always a possibility. There are steps you can take in advance for greater wintertime safety in your home and in your car.

Emergency supplies list:

- an alternate way to heat your home during a power failure:
  - dry firewood for a fireplace or wood stove, or
  - kerosene for a kerosene heater
- furnace fuel (coal, propane, or oil)
- electric space heater
- blankets
- matches
- multipurpose, dry-chemical fire extinguisher
- first aid kit and instruction manual
- flashlight or battery-powered lantern
- battery-powered radio
- battery-powered clock or watch
- extra batteries
- non-electric can opener
- snow shovel
- rock salt
- special needs items (diapers, hearing aid batteries, etc.)

## Prepare Your Home for Winter

Although periods of extreme cold cannot always be predicted far in advance, weather forecasts can sometimes provide you with several days' notice. Listen to weather forecasts regularly, and check your emergency supplies whenever a period of extreme cold is predicted.

If you plan to use a fireplace or wood stove for emergency heating, have your chimney or flue inspected

each year. Ask your local fire department to recommend an inspector, or find one in the yellow pages of your telephone directory under "chimney cleaning."

Also, if you'll be using a fireplace, wood stove, or kerosene heater, install a smoke detector and a battery-operated carbon monoxide detector near the area to be heated. Test them monthly, and replace batteries twice yearly.

Your ability to feel a change in temperature decreases with age, and older people are more susceptible to health problems caused by cold. If you are more than 65 years old, place an easy-to-read thermometer in an indoor location where you will see it frequently, and check the temperature of your home often during the winter months.

Insulate any water lines that run along exterior walls so your water supply will be less likely to freeze. To the extent possible, weatherproof your home by adding weather-stripping, insulation, insulated doors and storm windows, or thermal-pane windows.

#### Winter Survival Kit For Your Home

Keep several days' supply of these items:

- **Food** that needs no cooking or refrigeration, such as bread, crackers, cereal, canned foods, and dried fruits. Remember baby food and formula if you have young children.
- **Water** stored in clean containers or purchased, bottled water -- in case your water pipes freeze and rupture -- 5 gallons per person.
- **Medicines** that any family member may need.

If your area is prone to long periods of cold temperatures, or if your home is isolated, stock additional amounts of food, water, and medicine.

### Prepare Your Car for Winter

You can avoid many dangerous winter travel problems by planning ahead. Have maintenance service on your vehicle as often as the manufacturer recommends. In addition, every fall:

- Have the radiator system serviced, or check the antifreeze level yourself with an antifreeze tester. Add antifreeze, as needed.
- Replace windshield-wiper fluid with a wintertime mixture.
- Replace any worn tires, and check the air pressure in the tires.

During winter, keep the gas tank near full to help avoid ice in the tank and fuel lines.

### Winter Survival Kit for Your Car

Equip your car with these items:

- blankets
- first aid kit
- a can and waterproof matches (to melt snow for water)
- windshield scraper
- booster cables
- road maps
- compass
- tool kit
- paper towels
- bag of sand or cat litter(to pour on ice or snow for added traction)
- tire chains (in areas with heavy snow)
- collapsible shovel
- high-calorie canned or dried foods and a can opener
- flashlight and extra batteries
- canned compressed air with sealant (for emergency tire repair)
- brightly colored cloth

## Indoor Safety

### Heat Your Home Safely

If you plan to use a wood stove, fireplace, or space heater, be extremely careful. Follow the manufacturer's instructions as well as the advance home safety measures on page 4 and remember these safety tips:

- Store a multipurpose, dry chemical fire extinguisher near the area to be heated.
- Do not burn paper in a fireplace.
- Ensure adequate ventilation if you must use a kerosene heater.
- Use only the type of fuel your heater is designed to use -- don't substitute.
- If your heater has a damaged electrical cord or produces sparks, don't use it.
- Use fireplaces, wood stoves, and other combustion heaters only if they are properly vented to the outside and do not leak flue gas into the indoor air space.
- Do not place a space heater near things that may catch on fire, such as drapes, furniture, or bedding.

### Light and Cook Safely

If there is a power failure:

- Use battery-powered flashlights or lanterns rather than candles, if possible.
- Never leave lit candles unattended.
- Never use a charcoal grill indoors -- the fumes are deadly.

- If you must use a small, portable gas camp stove indoors, be sure to:
  - use adequate ventilation; and
  - cook several feet away from drapes, furniture, or other things that can catch on fire.

## Conserve Heat

You may need fresh air coming in for your heater or for emergency cooking arrangements. But if you don't need extra ventilation, keep as much heat as possible inside your home. Avoid unnecessary opening of doors or windows. Close off unneeded rooms, stuff towels or rags in cracks under doors, and close draperies or cover windows with blankets at night.

## Monitor Temperature

Infants less than one year old should never sleep in a cold room because (1) infants lose body heat more easily than adults; and (2) unlike adults, infants can't make enough body heat by shivering. Provide warm clothing and a blanket for infants and try to maintain a warm indoor temperature. If the temperature cannot be maintained, make temporary arrangements to stay elsewhere. In an emergency, you can keep an infant warm using your own body heat. If you must sleep, take precautions to prevent rolling on the baby. Pillows and other soft bedding can also present a risk of smothering; remove them from the area near the baby.

Older adults often make less body heat because of a slower metabolism and less physical activity. If you are more than 65 years of age, check the temperature in your home often during severely cold weather. Also, check on elderly friends and neighbors frequently to ensure that their homes are adequately heated.

## Keep a Water Supply

Extreme cold can cause water pipes in your home to freeze and sometimes rupture. When very cold temperatures are expected:

- Leave all water taps slightly open so they drip continuously.
- Keep the indoor temperature warm.
- Improve the circulation of heated air near pipes. For example, open kitchen cabinet doors beneath the kitchen sink.

If your pipes do freeze, do not thaw them with a torch. Instead, thaw them slowly by directing the warm air from an electric hair dryer onto the pipes.

If you cannot thaw your pipes, or the pipes are ruptured, use bottled water or get water from a neighbor's home. As an emergency measure -- if no other water is available -- snow can be melted for water. Bringing water to a rolling boil for one minute will kill most microorganisms or parasites that may be present, but won't remove chemical pollutants sometimes found in snow.

## Eat and Drink Wisely

Eating well-balanced meals will help you stay warmer. Do not drink alcoholic beverages -- they cause your body to lose heat more rapidly. Instead, drink warm, sweet beverages such as hot chocolate or sweetened coffee or tea to help maintain your body temperature. If you have any dietary restrictions, ask your doctor.

---

## Outdoor Safety

When the weather is extremely cold, and especially if there are high winds, try to stay indoors. Make any trips outside as brief as possible, and remember these tips to protect your health and safety.

### Dress Warmly and Stay Dry

Adults and children should wear:

- **a hat**
- **a scarf or knit mask** to cover face and mouth
- **sleeves** that are snug at the wrist
- **mittens** (they are warmer than gloves)
- **water-resistant coat and shoes**
- **several layers of loose-fitting clothing**

Be sure the outer layer of your clothing is tightly woven, preferably wind resistant, to reduce body-heat loss caused by wind. Wool, silk, or polypropylene inner layers of clothing will hold more body heat than cotton. Stay dry -- wet clothing chills the body rapidly. Excess perspiration will increase heat loss, so remove extra layers of clothing whenever you feel too warm. Also, avoid getting gasoline or alcohol on your skin while de-icing and fueling your car or using a snow blower. These materials in contact with the skin greatly increase heat loss from the body. Do not ignore shivering. It's an important first sign that the body is losing heat. Persistent shivering is a signal to return indoors.

### Avoid Exertion

Cold weather puts an extra strain on the heart. If you have heart disease or high blood pressure, follow your doctor's advice about shoveling snow or performing other hard work in the cold. Otherwise, if you have to do heavy outdoor chores, dress warmly and work slowly. Remember, your body is already working hard just to stay warm, so don't overdo it.

### Understand Wind Chill

As the speed of the wind increases, it can carry heat away from your body much more quickly. When there are high winds, serious weather-related health problems are more likely, even when temperatures are only cool.

<b>Wind Chill Factor</b>
--------------------------

		Actual air temperature °F												
		40	35	30	25	20	15	10	5	0	-5	-10	-15	-20
		Apparent temperature °F												
Wind speed (mph)	4	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20
	5	37	32	27	22	16	11	6	1	-5	-10	-15	-20	-26
	10	28	22	16	10	4	-3	-9	-15	-21	-27	-33	-40	-46
	20	18	11	4	-3	-10	-18	-25	-32	-39	-46	-53	-60	-67
	30	13	5	-2	-10	-18	-25	-33	-41	-48	-56	-64	-71	-79
	40	10	2	-6	-14	-22	-29	-37	-45	-53	-61	-69	-77	-85
	50	9	1	-7	-15	-23	-31	-39	-47	-55	-63	-71	-79	-87

## Avoid Ice

Walking on ice is extremely dangerous. Many cold-weather injuries result from falls on ice-covered sidewalks, steps, driveways, and porches. Keep your steps and walkways as free of ice as possible using rock salt or another chemical de-icing compound. Sand may also be used on walkways to reduce the risk of slipping.

## Be Safe During Recreation

If you are hiking, camping, or skiing during cold weather, avoid becoming overtired. Be prepared to take emergency shelter, and carry waterproof matches and paraffin fire starters with you. Carefully watch for signs of cold-weather health problems.

## Be Cautious About Travel

- Listen for radio or television reports of travel advisories issued by the National Weather Service.
- Avoid traveling on ice-covered roads if at all possible.
- If you must travel by car, use tire chains.
- If you must travel, let someone know your destination and when you expect to arrive. Ask them to notify authorities if you are late.
- Check and restock the winter emergency supplies in your car before you leave.

- Never pour water on your windshield to remove ice or snow; shattering may occur.
- Don't rely on a car to provide sufficient heat; the car may break down.
- Always carry clothing appropriate for the winter conditions.

## What to Do if You Get Stranded

Staying in your vehicle when stranded is often the safest choice if winter storms create poor visibility or if roadways are ice covered. These steps will increase your safety when stranded:

- Tie a brightly colored cloth to the antenna as a signal to rescuers.
- Move anything you need from the trunk into the passenger area.
- Wrap your entire body, including your head, in extra clothing, blankets, or newspapers.
- Stay awake. You will be less vulnerable to cold-related health problems.
- Run the motor (and heater) for about 10 minutes per hour, opening one window slightly to let in air. Make sure that snow is not blocking the exhaust pipe -- this will reduce the risk of carbon monoxide poisoning.
- As you sit, keep moving your arms and legs to improve your circulation and stay warmer.
- Do not eat unmelted snow because it will lower your body temperature.

---

## Cold-Weather Health Conditions

Serious health problems can result from prolonged exposure to the cold. The most common cold-related problems are hypothermia and frostbite.

### Hypothermia

When exposed to cold temperatures, your body begins to lose heat faster than it can be produced. Prolonged exposure to cold will eventually use up your body's stored energy. The result is hypothermia, or abnormally low body temperature. Body temperature that is too low affects the brain, making the victim unable to think clearly or move well. This makes hypothermia particularly dangerous because a person may not know it is happening and won't be able to do anything about it.

Hypothermia is most likely at very cold temperatures, but can occur even at cool temperatures (above 40°F) if a person becomes chilled from rain, sweat, or submersion in cold water.

Victims of hypothermia are most often (1) elderly people with inadequate food, clothing, or heating; (2) babies sleeping in cold bedrooms; and (3) people who remain outdoors for long periods -- the homeless, hikers, hunters, etc.

### Recognizing Hypothermia

Warnings signs of hypothermia:



**Adults:**

- shivering / exhaustion
- confusion / fumbling hands
- memory loss / slurred speech
- drowsiness

**Infants:**

- bright red, cold skin
- very low energy

**What to Do**

If you notice any of these signs, take the person's temperature. If it is below 95°, the situation is an emergency -- get medical attention immediately.

If medical care is not available, begin warming the person, as follows:

- Get the victim into a warm room or shelter.
- If the victim has on any wet clothing, remove it.
- Warm the center of the body first -- chest, neck, head, and groin -- using an electric blanket, if available. Or use skin-to-skin contact under loose, dry layers of blankets, clothing, towels, or sheets.
- Warm beverages can help increase the body temperature, but do not give alcoholic beverages. Do not try to give beverages to an unconscious person.
- After body temperature has increased, keep the person dry and wrapped in a warm blanket, including the head and neck.
- Get medical attention as soon as possible.

A person with severe hypothermia may be unconscious and may not seem to have a pulse or to be breathing. In this case, handle the victim gently, and get emergency assistance immediately. Even if the victim appears dead, CPR should be provided. CPR should continue while the victim is being warmed, until the victim responds or medical aid becomes available. In some cases, hypothermia victims who appear to be dead can be successfully resuscitated.

**Frostbite**

Frostbite is an injury to the body that is caused by freezing. Frostbite causes a loss of feeling and color in affected areas. It most often affects the nose, ears, cheeks, chin, fingers, or toes. Frostbite can permanently damage the body, and severe cases can lead to amputation. The risk of frostbite is increased in people with reduced blood circulation and among people who are not dressed properly for extremely cold temperatures.

**Recognizing Frostbite**

At the first signs of redness or pain in any skin area, get out of the cold or protect any exposed skin -- frostbite may be beginning. Any of the following signs may indicate frostbite:

- a white or grayish-yellow skin area
- skin that feels unusually firm or waxy
- numbness

A victim is often unaware of frostbite until someone else points it out because the frozen tissues are numb.

### What to Do

If you detect symptoms of frostbite, seek medical care. Because frostbite and hypothermia both result from exposure, first determine whether the victim also shows signs of hypothermia, as described previously. Hypothermia is a more serious medical condition and requires emergency medical assistance.

If (1) there is frostbite but no sign of hypothermia and (2) immediate medical care is not available, proceed as follows:

- Get into a warm room as soon as possible.
- Unless absolutely necessary, do not walk on frostbitten feet or toes -- this increases the damage.
- Immerse the affected area in warm -- not hot -- water (the temperature should be comfortable to the touch for unaffected parts of the body).
- Or, warm the affected area using body heat. For example, the heat of an armpit can be used to warm frostbitten fingers.
- Do not rub the frostbitten area with snow or massage it at all. This can cause more damage.
- Don't use a heating pad, heat lamp, or the heat of a stove, fireplace, or radiator for warming. Affected areas are numb and can be easily burned.

These procedures are not substitutes for proper medical care. Hypothermia is a medical emergency and frostbite should be evaluated by a health care provider. It is a good idea to take a first aid and emergency resuscitation (CPR) course to prepare for cold-weather health problems. Knowing what to do is an important part of protecting your health and the health of others.

---

## One more cool tip...

Taking preventive action is your best defense against having to deal with extreme cold-weather conditions. By preparing your home and car in advance for winter emergencies and by observing safety precautions during times of extremely cold weather, you can reduce the risk of weather-related health problems.

---

[Introduction](#) | [Plan Ahead](#) | [Indoor Safety](#) | [Outdoor Safety](#) | [Cold-Weather Health Conditions](#) | [One more cool tip...](#)

---

[CDC Prevention Guides for Emergencies and Disasters](#)